



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO
DI FARMACIA
E BIOTECNOLOGIE

AVVISO DI SEMINARIO

Il giorno **17 Gennaio 2025**
alle ore **14.30**

Dr. David Scheidweiler

SNSF Postdoctoral Fellow, Patil Lab, MRC Toxicology Unit, University of Cambridge,
UK

(ospite di Prof.ssa Manuela Bartolini)

terrà un seminario in lingua inglese dal titolo:

How spatial structure, flow, and resource heterogeneity modulate the spatial organization and interactions in bacterial systems

in streaming:

<https://teams.microsoft.com/l/meetup-join/19%3aN09c0NlyEssBnF7ObCyDOQwkgDWm1qdd9f7F2nJV9fw1%40thread.tacv2/1631519544944?context=%7b%22id%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22oid%22%3a%225a941351-ef41-4aa4-8771-fa50a6d62ca1%22%7d>

Collegli e studenti sono cordialmente invitati

ABSTRACT

Bacteria inhabit complex ecosystems, such as soil and biological tissues, characterized by structural heterogeneity, chemical gradients, and intricate transport dynamics. These microscale features regulate transport of individuals, their activity and interactions, shaping the distribution and composition of microbial communities at larger scales. The resulting biological diversity translates into a plethora of metabolic capabilities, that make use of the different resources available, fostering cooperative and competitive interactions.

By leveraging microfluidics, it is possible to replicate the spatial and chemical heterogeneity inherent to these ecosystems with high precision. Combined with microscopy, these tools provide a fresh perspective into microbial ecology, allowing the study of living bacterial systems at the microscale, in environments that mimic biological tissues or soil.

Here, I will share some examples on how physical microstructures, flow and resource heterogeneity govern the spatial organization of bacterial systems characterized by different competitive strategies. Overall, with this talk, I wish to encourage a deeper consideration of integrating microscale physico-chemical processes into microbial ecology research.

BIOGRAPHICAL SKETCH

David is a postdoctoral researcher in the Unit of Toxicology, at the University of Cambridge, UK. He received a bachelor's degree in Chemical Engineering from the University of Bologna and a master's degree in Environmental Sciences from the Brandenburg Technical University in Germany. He completed his PhD at EPFL in Lausanne, with a thesis on Microbial life in porous systems. After 3 years of postdoc in the University of Lausanne, where he focused on the role of flow mediated interactions in microbial systems, he has been awarded with a fellowship to move abroad at the Institut Pasteur, in Paris. There he worked on the interactions between gut commensals in systems mimicking the oxygen gradients encountered in the intestinal mucosa. Currently, in the lab of Kiran Patil in Cambridge, he works on projects that aim to resolve the interactions within synthetic communities of gut commensals, in presence of diverse resources, and exposed to xenobiotics such as pesticides or pharmaceuticals.